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TITLE Preschool Teacher Attitude and Knowledge Regarding  
Fetal Alcohol Syndrome and Fetal Alcohol Effects.  
PUB DATE 29 Nov 95  
NOTE 32p.; Paper presented at the Annual Conference of the  
National Association of Early Childhood Teacher  
Educators (Washington, DC, November 29, 1995).  
PUB TYPE Reports - Research/Technical (143) --  
Speeches/Conference Papers (150)  
  
EDRS PRICE MF01/PC02 Plus Postage.  
DESCRIPTORS \*Academic Achievement; Child Development; \*Fetal  
Alcohol Syndrome; \*Prenatal Influences; Preschool  
Education; Preschool Teachers; School Role; Teacher  
Education; Teacher Role  
IDENTIFIERS \*Teacher Knowledge

## ABSTRACT

The Centers for Disease Control estimate that each year more than 8,000 Fetal Alcohol Syndrome (FAS) babies are born, and that many more babies go undiagnosed with Fetal Alcohol Effects (FAE), a less severe condition. FAS and FAE have been identified as major contributors to poor memory, shorter attention spans, lower IQs, diminished achievement levels, and other learning disabilities and behavior problems in young children. A survey was conducted to ascertain teachers' knowledge of the syndrome, characteristics that typify alcohol-related birth defects, and prevention measures that may be shared with parents in a counseling session. Subjects were 285 Michigan teachers in preschool regular education, preschool special education, kindergarten, and Head Start. Results of the survey indicated that: (1) the teachers had a moderate awareness of FAS and FAE; (2) the syndrome was a problem of growing significance in their classroom; (3) teachers felt they lacked the ability to identify a student with FAS in their classroom; and (4) only a little over half the teachers' schools obtained a child's developmental history. Recommendations based on the results include the following: (1) schools should include questions concerning prenatal alcohol and drug exposure in health screening surveys; (2) teacher education programs should offer training to familiarize teacher candidates with the characteristics, strategies, and methods concerning the education of children with FAS/FAE; and (3) updated resources and information packages should be made available for parent education efforts and community dissemination. (Contains 29 references.) (TJQ)

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## **PRESCHOOL TEACHER ATTITUDE AND KNOWLEDGE REGARDING FETAL ALCOHOL SYNDROME AND FETAL ALCOHOL EFFECTS**

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**A RESEARCH REPORT PRESENTED AT THE**

**1995 ANNUAL CONFERENCE**

**NATIONAL ASSOCIATION OF EARLY CHILDHOOD TEACHER  
EDUCATORS**

**PS 024049**

**WASHINGTON, D.C.  
NOVEMBER 29, 1995**

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The Centers for Disease Control estimate that each year more than 8,000 Fetal Alcohol Syndrome (FAS) babies are born; many more babies go undiagnosed with Fetal Alcohol Effects (FAE), a less severe condition. FAS and FAE have been identified as major contributors to children who show poor memory, shorter attention spans, lower IQ's, diminished achievement levels and other learning disabilities and behavior problems. This presentation describes the survey results of preschool regular education, preschool special education, kindergarten, and Head Start teachers ( $n = 285$ ) in Michigan with regard to their knowledge of the syndrome, characteristics that typify alcohol-related birth defects, and prevention measures which may be shared with parents in counseling session. Comparisons are provided by instructional category, years of teaching experience, and community type (rural versus urban) for 36 questions, which were presented to the sample.

## ACKNOWLEDGMENT

Grateful acknowledgment is extended to the following graduate students who participated in this research project by assisting in the review of the current literature, distribution of the survey forms, and follow-ups with the survey group:

Lynn Marie Coppernoll  
Kay Lafrinere Robinson  
Susan E. Ortlieb  
Andrea Guinan  
Betty Lou Pleva  
Benjamin Bruce Laird  
Luan Sue Ross  
Rosalie Marie Schultz-Overheul

Appreciation is given as well to the Grand Rapids Public School District's Research Office and Mr. Gerald Dawkins, Assistant Superintendent.

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### **PURPOSE**

Fetal Alcohol Syndrome (FAS) and Fetal Alcohol Effects (FAE) have been recognized and diagnosed for the past twenty years. Coles and Platzman (1992) report that alcohol is a potent teratogen that is associated with a wide range of negative effects in offspring of women who drink during pregnancy. It is estimated that approximately two-thirds of American women of childbearing age drink alcohol and nearly 5 -to- 10 percent of pregnant women drink at levels high enough to place their offspring at risk for the effects of fetal alcohol exposure (National Institute on Drug Abuse, 1988; Weiner, 1984). With the advent of increased illegal drug use among certain high-risk populations, polydrug abuse, including alcohol abuse, may also be increasing (Chasnoff et al., 1990).

Fetal alcohol syndrome (FAS) occurs in 1 -to- 3 infants per 1000 births, making alcohol exposure one of the most frequently identifiable causes of mental retardation (Abel and Sokol, 1987; Burgess & Streissguth, 1990; Rathburn, 1993). Additionally, another 3 -to- 5 individuals per 1,000 births show less severe effects of exposure, which have been termed alcohol-related birth defects (ARBD) of fetal alcohol effects (FAE).

Since early childhood teachers are among the first recipients of children who have FAS or FAE, they should be able to identify children with FAS and FAE and to become aware of specific teaching strategies that will enable these children to be successful in school. This study concerns teacher knowledge of FAS and FAE and the abnormalities resulting from the condition.

## LITERATURE REVIEW

In 1973 Jones and Smith introduced the term "Fetal Alcohol Syndrome" to describe a pattern of abnormalities found in children born to alcoholic women. The definitions significant since it clearly delineated a clinically recognizable syndrome that was distinct from all other patterns of congenital malformation, and that was seen exclusively in the offspring of mothers who drank large amounts of alcohol during pregnancy (Aase, 1994; National Institute on Alcohol Abuse and Alcoholism, 1991; Burgess & Streissguth, 1994). An estimated 5,000 infants are born each year with FAS, one in every 750 births, but there is currently no accurate method of determining the actual number of FAS children born. Though it is found in all races and socioeconomic groups that consume alcohol, in the United States, epidemiological data suggest that the rates of FAS tend to be highest in Native Americans, African-Americans, and people of low socioeconomic status (Aase, 1994, Pancratz, 1993).

Even though every pregnancy is different, the smallest amount of alcohol consumed prenatally may cause adverse effects on the fetus. Because of the body's ability to tolerate low doses of most toxic substances, adverse effects

may be seen only when exposure exceeds a certain minimum threshold does (the minimum amount of alcohol to produce an effect). Current research suggests that seven standard drinks per week is the threshold level for most neurobehavioral effects (Jacobson & Jacobson, 1994; Harris et al., 1993). Schenk et al. (1994) report that an estimated 73% of infants are exposed to alcohol before birth, resulting in varying degrees of learning disabilities, developmental delays, and behavior problems that have a lifelong impact on the child's ability to learn and socialize with peers.

The rate of FAS in a population is contingent on the rate of maternal alcohol abuse during pregnancy (Cordero et al., 1994). Maternal alcohol consumption is difficult to measure because of factors: poor memory, guilt, shame, or fear of disclosure on the pregnant women's part. When performing studies on FAS, it is necessary to rely on a woman's self-report on the frequency and the amount of drinking before and after conception, and during the entire pregnancy. However, reports show that when questioned, women with more serious alcohol-related problems were more likely to underreport their alcohol consumption during pregnancy (National Institute on Alcohol Abuse and Alcoholism, 1991).

Exposure to alcohol during the embryonic period (first trimester) of pregnancy can result in a wide range of symptoms, from mild retardation to severe deformities. Physical abnormalities may include facial dysmorphosis, craniofacial abnormalities, and limitations of joint movement. The greater the

physical abnormality, the higher the risk of a lower IQ. Recent studies indicate that some children exposed to alcohol prenatally have serious behavior and learning deficits, even though their IQ's are normal or borderline (Rosenthal, 1990).

Animal research shows that heavy alcohol consumption throughout the entire pregnancy results in a wide variety of effects characteristic of FAS, while episodic binge drinking at high levels results in partial expression of the syndrome, with the abnormalities being unique to the period of exposure (National Institute on Alcohol Abuse and Alcoholism, 1991). It is believed that most damage to the fetus occurs during the first and third trimesters, when the major organs are forming and when the fetus is known to be growing rapidly.

Children who exhibit some, but not all, symptoms of FAS are considered to have Fetal Alcohol Effects (FAE). FAE children exhibit varying degrees of developmental and behavioral problems and central nervous system dysfunction, such as delayed development, hyperactivity, motor incoordination, learning or attention problems, seizures, mental impairment, and language problems. It is estimated that 50,000 babies are born yearly with FAE (Streissguth, 1992).

FAS is difficult to recognize in newborns for three reasons: 1) facial stigmata of FAS are often subtle; 2) some types of central nervous system deficits in infants are difficult to detect; and 3) the birthweight of some affected infants is normal (Morbidity and Mortality Weekly Report, 1993). In addition,

many children with FAS and FAE go undiagnosed because of several other factors: the visible abnormalities cannot be substantiated due to family characteristics, age, or racial background; there are similarities to other disorders, or there is the presence of nonspecific abnormalities. When diagnosing children for FAS or FAE, one must consider the normal variation of features in the child's racial group or family; for instance, the broader lip normally seen in children of African-American parentage may cancel out the narrowing of the upper lip border in children with FAS. In many Native American groups, it is normal to have a moderate degree of midfacial hypoplasia. Also, height growth, level of IQ, and inherited body characteristics may obscure or mimic signs of FAS. Children with FAS and FAE may also share common symptoms with other birth defects (Aase, 1994).

There is no simple, objective test for diagnosing FAS. The actual syndrome must be medically diagnosed, although some health practitioners have questioned the utility of diagnosing alcohol-related birth defects because there is no known cure (Russell, 1994). Still three major symptoms are used in its diagnosis.

The first characteristic is a growth deficiency that is present prenatally and continues into childhood. Osborn et al. (1993) note that children with FAS usually fall below the second percentile in height, weight, and head circumference compared to their peers.

With regard to the second set of diagnostic characteristics, children with FAS demonstrate behavioral and cognitive impairments. This may include such behaviors as hyperactivity, motor problems, attention deficits, cognitive disabilities, and poor eating and sleeping patterns. Aase (1994) notes that intellectual performance and behavior are dependent on the age of the child at the time of diagnosis, and learning and behavior problems evolve throughout childhood and adolescence, involving more than a simple retardation factor.

In reference to the third set of diagnostic characteristic, children with FAS will evidence distinct patterns of facial anomalies and other physical abnormalities. The unique pattern of facial anomalies include short palperbral fissures (small eyes relative to the space between the eyes), flat midface, long and/or smooth filtrum, short nose, epicranthal folds, thin upper lip, low nasal bridge, minor ear anomalies, a small chin, low set ears, ptosis (drooping of the upper eyelids), and strabismus (a disorder of the eye in which the opti axes cannot be directed at the same object) (Aase, 1994; Randels & Streissguth, 1992). As facial dysmorphia occurs during the embryonic period which is the first eight weeks of the first trimester, craniofacial anomalies in human subjects are probably associated with drinking during the initial stage of pregnancy (Colles, 1994; Osborn et. al. (1993) report that malformations of the heart occur in 29% -to- 49% of infants affected with FAS. Also, almost half of these children have genital and renal malformations. Other anomalies may include congenital

hip dislocation, club feet, scoliosis, ligamentous laxity, flexion contractures of the elbow and polydactaly (a condition of having more than the normal number of fingers and toes).

Children with FAS are also at increased risk of sudden infant death syndrome because of respiratory complications associated with upper airway obstruction caused by physical anomalies (Osborn et al, 1993). Central nervous system dysfunctions are also included in the physical abnormalities. Burgess and Streissguth (1992) include microcephaly, alteration in reflex behavior, motor impairments, attention deficits, cognitive disabilities and hyperactivity. Osborn et. al. (1993) report that defects such as anencephaly (a congenital absence of the brain and spinal cord) occur more frequently in children with FAS. They also report that microcephaly occurs in greater than 80 percent of infants affected with FAS, and it becomes more evident as the child matures.

With regard to FAS, the syndrome's diagnosis depends on the ability of the physician to recognize the consistent pattern of minor, often subtle physical abnormalities. Some of these physical characteristics change with time, and their degree of severity may vary among individuals. Confirming the diagnosis of FAS in special patients is often difficult, even for physicians with considerable experience with FAS (Aase, 1994). Burgess and Streissguth (1990) recommend that FAS or FAE should be diagnosed by a developmental pediatrician or

dysmorphologist (a physician specializing in birth defects), and propose that there must be strong evidence of maternal drinking before the physician can make a positive diagnosis.

According to Weiner and Morse (1994), children with FAS are each unique, exhibiting some but not all of its characteristics; they are alike however, in that they all show learning difficulties and behavior problems. FAS continues to be the leading and only preventable cause of mental retardation in the western world.

FAS and FAE students can be found in all types of educational programs posing a challenge to today's educators. Experts believe that from one-third to two-thirds of all children in special education have been affected by alcohol (Burgess & Streissguth, 1992). Early intervention is one of the most critical services that educators can provide for FAS and FAE students to maximize the effectiveness of educational programs (Burgess & Streissguth, 1992; Olsen, 1994). Providing an early childhood curriculum that fits the needs of these children calls for diverse methods and materials.

Education of youngsters with FAS and FAE may be considered as both an art and a science. Most state educational systems do not recognize FAS or FAE as distinct handicapping conditions or as a separate funding category (Burgess & Streissguth, 1990). Lack of supporting specific educational programs for children with FAS and FAE make it necessary for educators to rely on

information and educational practices used with children with other developmental disabilities (Burgess, 1994). Children with FAS and FAE may be inappropriately placed within the school system if their condition has not been properly diagnosed, or if there is a misunderstanding of FAS by the school system (Weiner & Morse, 1994).

In trying to design appropriate programs for FAS and FAE students, this author has found the following to be effective teaching practices:

1. early intervention
2. developing reasonable expectations for students
3. teaching functional skills
4. teaching social skills
5. individualized programs
6. using behavior management strategies that promote independence
7. using collaborative efforts with the home
8. dissemination of information focused on prevention

FAS and FAE are lifelong disorders with an estimated lifetime cost of \$1.4 million per individual, for educational, medical, and living needs and care (Bloss, 1994). The growing number of FAS and FAE birth creates an impact on society in economic, educational, and medical areas. Community resources such as state and local agencies, hospitals, advocacy groups, and legal services, as well as the educational system, need to provide services to parents, to help them learn to deal with the behaviors and needs of their FAS and FAE children.

Prevention of FAS and FAE is a national health priority included in the Health People 2000 objectives for health promotion and disease prevention (Cordero et al., 1994). Educating and providing resources for better understanding of the cause of FAS and FAE and their prevention is necessary. FAS and FAE are not curable but they are preventable if women would follow the recommendation to abstain from drinking throughout pregnancy.

### **SURVEY GROUP**

The survey group was limited to teachers in the following job categories: preschool regular education, preschool special education, kindergarten, grades 1 and 2, and Head Start. The sample (n=285) was selected from teachers in the following northern Michigan school districts: Cheboygan-Otsego-Presque Isle Intermediate School District, Charlevoix-Emmet Intermediate School District, Traverse City Area Public School District, Mason-Lake Intermediate School District, Oceana Intermediate School District. Survey responses were received from 187 individuals or 66 percent of the sample group. Representation of the respondents by job category included: regular preschool 17.1%, special education preschool 7.5%, kindergarten 44.9%, grades 1 to 2 17.6%, Head Start 11.8%, missing 1.8%.

### **SURVEY INSTRUMENT**

A four-page back-to-back questionnaire was developed having 36 questions regarding awareness of FAS and FAE. The survey was composed of Likert-type items which were recorded on a computer scoring form using a

question-design procedure recommended by Mack (1994). Teachers were informed that the survey was not a test, and that they should mark those responses which represented a true reflection of their opinion. For the first 31 questions they were requested to record their responses by marking "strongly agree," "agree," "disagree," "disagree", and "strongly disagree." For the last five questions, they were requested to mark "true" or "false" to item. Each survey was given a confidential code which provided the opportunity of confirming submission of surveys and delivery of follow-up requests.

### **DATA COLLECTION**

Using a cover letter, teachers were informed that the instrument would take approximately 15 minutes to complete, and all responses would be considered confidential. They were also given a stamped envelope in which to return the questionnaire. Follow-up letters and return envelopes were provided to individuals who had not responded by the 10th day of the initial submission.

### **DATA ANALYSIS**

Data was tabulated using descriptive statistical procedures and the Crosstabs program of SPSS for Windows. Data scanning and analysis was provided by the Grand Rapids Public Schools' Research Department, and an aggregate response summary is presented in Appendix 1.

## FINDINGS

This study was concerned with teacher knowledge of FAS and FAE, characteristics that typify alcohol related birth defects, and prevention measurers which may be shared with parents in counseling sessions. These findings are based on the aggregate responses from all job categories included in the study: regular preschool teachers (17.1%), special education preschool teachers (7.5%), kindergarten teachers (44.9%), first and second grade teachers (17.6%), and Head Start Teachers (11.8%). The majority of the respondents (78.8%) had six or more years of experience, taught in a rural or suburban setting (72.2%), had a baccalaureate or higher degree (89.3%), were female (94.11%), and were of European-American heritage (72.7%).

Approximately half (54%) indicated that they obtained information from the parent regarding the child's developmental history. In comparison, 84.5% reported that they did not obtain information regarding the parent's alcohol consumption.

In terms of being prepared to teach FAS students, the respondents provided the following rank order information: 43.3% were somewhat prepared, 27.3% were somewhat not prepared, 25.7% were not prepared, and 3.2% were very well prepared. In response to the ability to identify a student with FAS, 57.9% reported that they lacked the qualifications.

Over the last two years, approximately 98% of the educators reported that they had taught 0-to-3 students with FAS and 3.7% responded that they had taught 3-to-7 students. In that same time period, approximately 96% of the respondents indicated that they had taught 0-to-3 students suspected as having FAS.

With regard to the prevalence of FAS, estimates varied in the following rank order: 1 in 100 births (40.1%), 1-in-500 births (31.8%), 1-in-1000 births (14.4%), and 1-in-800 births (8.6%). Knowledge of the prevalence of FAS by racial/ethnic group was evidenced by the following responses: all races (54.4%), most prevalent Native American (30.5%), most prevalent European-Americans (3.2%), most prevalent African-Americans (2.7%), most prevalent Asian-Americans (1.1%), and most prevalent Hispanic-Americans (0.5%). Prevalence of FAS across the various socioeconomic groups presented responses at 47.6% for being most prevalent in lower economic groups.

With regard to the biological impact of FAS, 87.2% noted that the first trimester was the period of greatest risk of FAS for the pregnant woman to consume alcohol. The highest response for the minimum level of alcohol consumption that would place the fetus in danger of FAS was 1-2 drinks once or twice a week (52.9%), 1-2 drinks daily (28.3%), 3-4 drinks within a week (10.7%), and 3-4 drinks daily (3.2%).

When requested to present their agreement with various statements regarding the character of FAS and FAE, respondents agreed to the following statements:

1. FAS children are identifiable (87% agreed or strongly agreed).
2. FAS children are characterized by a growth deficiency (75.9% agreed or strongly agreed).
3. FAS children have physical features that may change as they reach adolescence (51.5% strongly agreed or agreed).
4. FAS children characteristically have better expressive language than receptive language (98.8% strongly agreed or agreed)
5. FAS may result from even the smallest consumption by the pregnant mother (78% strongly agreed or agreed)
6. FAS children benefit best from early intervention (93.6% strongly agreed or agreed)
7. FAS is viewed as a childhood disability (61% strongly agreed or agreed)
8. FAS is becoming more of a problem in my classroom (60.9% strongly agreed or agreed)

When requested to present their agreement with various statements regarding the character of FAS or FAE, respondents disagreed to the following statements:

1. FAS is a condition that tends to subside with age (86.7% disagreed or strongly disagreed)
2. FAS children exhibit the same behavioral characteristics (64.7% disagreed or strongly disagreed)
3. FAS is the leading cause of mental impairment (51.4% disagreed or strongly disagreed)
4. FAS and FAE (fetal alcohol effect) are two names for the same condition (55.7% disagreed or strongly disagreed)

When requested to identify which of the following features are characteristic of FAS, respondents indicated "yes" to the following:

1. motor delays (79.7%)
2. hyperactivity (71.7%)
3. attention deficit problems (84.5%)
4. facial physical abnormalities (70.1%)
5. learning impairments (84.5%)

## CONCLUSIONS

Based on the findings in this study, one can conclude that the sample has a "moderate" awareness of FAS and FAE. On the survey questions regarding general facts about FAS/FAE, a majority of the respondents identified the correct answer. For example, the questions concerning the characteristic features of FAS/FAE such as motor delays, hyperactivity, attention deficit problems, facial physical abnormalities and learning impairments were answered correctly by a

majority of the teachers at all levels of expertise. As well, the teachers were informed about maternal drinking levels and the time of alcohol consumption which would place the fetus at greatest risk of FAS/FAE.

The incidence of FAS in the respondents' classrooms was relatively low, ranging mainly in the category of 0-3 students in the past two years, with suspected FAS cases at the same level. However, a majority of the teachers felt that the national incidence was higher than the current literature proposes.

The greatest percentage of teachers accurately identified the lower socioeconomic group as having the largest prevalence of FAS children, with the next highest percentage choosing all socioeconomic groups. On the question concerning prevalence among racial/ethnic groups, the majority reported all races as being the same. However, most of the teachers selected the Native America population as the second most prevalent groups for incidence of FAS. Interestingly, the high response to the Native American population may result from the greater press coverage of this population's alcohol problems which have been presented at the national and state levels.

Concerning the question associating FAS to mental impairment, over half of the teachers did not think this was true. As well, over half of the respondents disagreed that FAS and FAE are basically two names for the same condition. Accordingly, these teachers may not realize that many children may be affected by FAE, which affords the syndrome as being the primary contributor for mental impairment.

Over half of the educators reported that they were either somewhat unprepared or not prepared to teach students with FAS. A majority of the teachers reported that they lacked the ability to identify a student with FAS in their classroom. A majority of the teachers responded that FAS is becoming more of a problem in their classrooms.

Finally, an important finding of this research report is that an overwhelming majority agreed that FAS children benefit best from early intervention efforts, a finding confirmed by the current literature on FAS. However, only 54% of the teachers reported that their setting obtained information on the child's developmental history, and approximately 85 percent responded that information gathered from the child's developmental history did not include questions on the parent's alcohol consumption.

## **RECOMMENDATIONS**

Based on the data discovered in this study, the following recommendations are offered:

1. School districts should include questions concerning prenatal alcohol and drug exposure in their health screening survey.
2. Teacher education programs should offer training to familiarize teacher candidates with the characteristics, strategies, and methods concerning the education of children with FAS/FAE.
3. School districts should provide professional development opportunities for educators to learn the proper channels for the

diagnosis of FAS/FAE, and strategies for providing an appropriate curriculum and learning environment.

4. Updated resources and information packages should be made available for parent education efforts and community dissemination: speakers, video tapes, and reading materials.
5. Educators should have opportunities to attend workshops or classes relating to FAS/FAE offered by other prevention and intervention agencies.
6. Communities should develop district-wide plans for meeting the needs of students with known or suspected effects.
7. There needs to be coordination of services between health providers, social service agencies, parents, and schools to ensure optimal opportunities for FAS/FAE children.
8. As early childhood teachers are often involved in the initial diagnosis and referral of FAS/FAE children, these educators need to be aware of the characteristics of FAS/FAE and the local procedures for referral and diagnosis.
9. Ongoing research and education continue to be a need through all systems in society to help prevent future afflictions of this unnecessary contributor to mental impairment.

Finally, as the overwhelming predominance of representation in this study was from rural or suburban areas, this study should be extended to teachers in urban areas to determine the likelihood of comparable responses.

## REFERENCES

Abel, E. L. & Sokol, R. J. (1991). A revised conservative estimate of the incidence of FAS and its economic impact. Alcoholism: Clinical and Experimental Research. 15, 514-524.

Aase, J. (1994). Clinical recognition of FAS. Alcohol Health & Research World. 18, 12-15.

Bloss, G. (1994). The economic cost of FAS. Alcohol Health & Research World. 18, 53-54.

Burgess, D. M. (1994). Helping prepare children with FAS or FAE for school and beyond. Alcohol Health & Research World. 18, 73.

Burgess, D. M. & Streissguth, A. P. (1990, November). Educating students with Fetal Alcohol Syndrome effects. Pennsylvania Reporter. 22, 1-6.

Burgess, D. M. & Streissguth, A. P. (1992). Fetal Alcohol Syndrome and Fetal Alcohol Effects: Principles for Educators. Phi Delta Kappan. 74, 24-30.

Chasnoff, I. J., Landress, H. J., & Barrett, M. E. (1990). The prevalence of illicit-drug or alcohol use during pregnancy and discrepancies in mandatory reporting in Pinellas County, Florida. New England Journal of Medicine. 322 (17), 1202-1206.

Coles, C. D. & Platzman, K. A. (1992). Identifying the needs of drug-affected children: Policy Issues. OSAP Prevention Monograph (U.S. Dept. of Health and Human Services), #11, 59-86.

Colles, C. (1994). Critical periods for prenatal alcohol exposure. Alcohol Health & Research World. 18, 22-29.

Condero, J. F., Floyd, R. L., Martin, M.D., Davis, M. & Hymbaugh, K. (1994). Tracking the prevalence of FAS. Alcohol Health & Research World. 18, 82-85.

Jacobson, J. L. & Jacobson, S.W. (1994). Prenatal alcohol exposure and neurobehavioral development: Where is the threshold? Alcohol & Health Research World. 18, 30-36.

Jones, K. & Smith D. (1973). Recognition of the Fetal Alcohol Syndrome in early infancy. Lancet, 2 (7836), 999-1001.

Mack, F. (1994). Resources for educational testing and measurement. Champaign, IL: Stipes Publishing Company.

National Institute on Alcohol Abuse and Alcoholism (1991). Alcohol Alert 13 (Brochure). Rockville, MD: US Department of Health & Human Services.

National Institute on Drug Abuse (1988). National household survey on drug abuse: Main findings (1985). (DHHS Publication No. Adm. 88-1586). Washington, DC: US Government Printing Office.

Olson, H.C. (1994). The effects of prenatal alcohol exposure on child development. Infants and Young Child. 6, 10-25.

Osborn, J. A., Harris, S. R. & Weinberg, J. (1993). Fetal alcohol syndrome: Review of the literature and implications for physical therapists. Physical Therapist. 73, 608-610.

Pancratz, D. R. (1993). Fetal Alcohol Syndrome and Fetal Alcohol Effects in Child Development. (ERIC Document Reproduction Service No. ED 370-277).

Phelps, L. & Grabowski, J.A. (1992). Fetal Alcohol Syndrome: Diagnosis features and psychoeducational risk factors. School Psychology. 7, 112-128.

Randels, S. P. & Streissguth, A. P. (1992). Fetal Alcohol Syndrome and Nutritional Issues. Nutrition Focus. 7, 1-6.

Rathburn, P. (1993). Fantastic Antone Succeeds: Experiences in educating children with FAS. Fairbanks, Alaska: University of Alaska Press.

Rosenthal, E. (1990 February 4). When a pregnant woman drinks. The New York Times Magazine. 29-31.

Russel, M. (1994). New assessment tools for risk drinking during pregnancy: T-ACE, TWEAK, and others. Alcohol Health & Research World. 18, 55-61.

Schenck, R. et. al. (1994). Fetal Alcohol Syndrome (FAS), Fetal Alcohol Effects (FAE): Implications for rural classrooms. Proceedings of the 14th Annual Meeting of the National conference of the American Council on Rural Special Education (ACRES), Austin, Texas, March 23-26, 1994 (ERIC Document Reproduction Service No. ED 369 602).

Streissguth et. al. (1991). Fetal Alcohol Syndrome in adolescents and adults. Journal of the American Medical Association. 2654 (15), 1961-1967.

Streissguth, A. (1992). Fetal Alcohol Effects: A clinical perspective of later development consequences: Maternal substance abuse and the developing system. Academic Press Inc. 5-24.

Streissguth, A. P. (1994). A long-term perspective of FAS. Alcohol Health & Research World. 18, 74-81.

Weiner, L. McCarty, D. & Potter, D. (1988). A successful in-service training program for health care professionals. Substance Abuse, 9 (1), 20-28.

Weiner, L. & Morse, B. A. (1994). Intervention and the child with FAS. Alcohol Health & Research World. 18, 67-72.

**APPENDIX 1**  
**QUESTION RESPONSES BY FREQUENCY AND PERCENT**  
**(n = 187)**

**1. Which label describes your current teaching position?**

a. regular preschool	32	17.1
b. special education preschool	14	7.5
c. kindergarten	84	44.9
d. grades 1 or 2	33	17.6
e. Head Start	22	11.8
<i>missing</i>	2	1.1

**2. How many years of teaching experience have you had?**

a. 0 - 2	16	8.6
b. 3 - 5	23	12.3
c. 6 - 10	38	20.3
d. 11 or more	102	54.5
<i>missing</i>	8	4.3

**3. What type of community best identifies your student population?**

a. rural	135	72.2
b. suburban	23	12.3
c. urban	28	15.0
<i>missing</i>	1	0.5

**4. What is your level of professional education?**

a. less than a baccalaureate degree	15	8.0
b. baccalaureate degree	102	54.5
c. masters degree	62	33.2
d. specialist degree	3	1.6
e. doctorate degree	0	0
<i>missing</i>	5	2.7

**5. What is your gender group?**

a. male	9	4.8
b. female	176	94.1
<i>missing</i>	2	1.6

**6. What is your racial/ethnic group?**

a. Asian-American	12	6.4
b. African-American	5	2.7
c. European-American	136	72.7
d. Hispanic	1	0.5
e. Native American	1	0.5
<i>missing</i>	4	2.1

**7. When gathering information from a parent on a child's developmental history, does your interview form include question on prenatal history?**

a. yes	101	54.0
b. no	82	43.9
<i>missing</i>	4	2.1

**8. When gathering information form a parent on a child's developmental history, does your interview form include questions on alcohol consumption?**

a. yes	26	13.9
b. no	158	84.5
<i>missing</i>	3	1.6

**9. How well prepared are you to teach students who may be diagnosed with Fetal Alcohol Syndrome?**

a. very well prepared	6	3.2
b. somewhat prepared	81	43.3
c. somewhat prepared	51	27.3
d. not prepared	48	25.7
<i>missing</i>	1	0.5

**10. Respond to the following statement:**

**"I have the ability to identify a student with FAS in my class."**

a. strongly agree	4	2.1
b. agree	72	38.5
c. disagree	90	48.1
d. strongly disagree	18	9.8
<i>missing</i>	3	1.6

**11. Based on the last two years, indicate the number of students you have taught who have been diagnosed as having Fetal Alcohol Syndrome.**

a. 0 - 3	179	95.7
b. 4 - 6	7	3.7
c. 7 - 9	1	0.5
d. 10 or more	0	0
<i>missing</i>	0	0

**12. Based on the last two years, indicate the number of students you have taught who you suspected may have had Fetal Alcohol Syndrome.**

a. 0 - 3	135	72.2
b. 4 - 6	40	21.5
c. 7 - 9	6	3.2
d. 10 or more	5	2.7
<i>missing</i>	1	0.5

**13. What is the prevalence of Fetal Alcohol Syndrome across the various racial/ethnic groups in the US?**

a. all races are the same	102	54.5
b. most prevalent in Native Americans	57	30.5
c. most prevalent in African-Americans	5	2.7
d. most prevalent in Hispanic-Americans	1	0.5
e. most prevalent in European-Americans	6	3.2
f. most prevalent in Asian-Americans	2	1.1
<i>missing</i>	14	7.5

**14. What is the prevalence of Fetal Alcohol Syndrome across the various socioeconomic-economic groups in the US?**

a. most prevalent in lower economic groups	89	47.6
b. most prevalent in middle economic groups	2	1.1
c. most prevalent in upper economic groups	0	0
d. equal prevalence in all economic groups	83	44.4
<i>missing</i>	13	7.0

**15. During which period of fetal development is the risk of Fetal Alcohol Syndrome greatest for a pregnant woman to consume alcohol?**

a. first trimester	163	87.2
b. second trimester	10	5.3
c. third trimester	6	3.2
<i>missing</i>	8	4.3

**16. A conservative estimate of the prevalence of FAS is approximately:**

a. on in 100 births	75	40.1
b. one in 500 births	58	31.0
c. one in 800 births	16	8.6
d. one in 1,000 births	27	14.4
<i>missing</i>	11	5.9

**17. What is the minimal level of alcohol consumption that would place the fetus in danger of Fetal Alcohol Syndrome?**

a. 1 - 2 drinks once or twice a week	99	52.9
b. 1 - 2 drinks daily	53	28.3
c. 3 - 4 drinks within a week	20	10.7
d. 3 - 4 drinks daily	6	3.2
<i>missing</i>	9	4.8

**SELECT THE RESPONSE THAT BEST REFLECTS YOUR OPINION:**

**18. FAS children are identifiable**

a. strongly agree	40	21.4
b. agree	123	65.8
c. disagree	20	10.7
d. strongly disagree	1	0.5
<i>missing</i>	3	1.6

**19. FAS is a condition that tends to subside with age**

a. strongly agree	4	2.0
b. agree	15	8.0
c. disagree	88	47.1
d. strongly disagree	74	39.6
<i>missing</i>	6	3.2

**20. FAS children exhibit the same behavioral characteristics**

a. strongly agree	5	2.7
b. agree	54	28.9
c. disagree	90	48.1
d. strongly disagree	31	16.6
<i>missing</i>	7	3.7

**21. FAS is a lifelong disability**

a. strongly agree	70	37.4
b. agree	85	45.5
c. disagree	17	9.1
d. strongly disagree	9	4.8
<i>missing</i>	6	3.2

**22. FAS is the leading cause of mental impairment**

a. strongly agree	15	8.0
b. agree	67	35.8
c. disagree	88	47.1
d. strongly disagree	8	4.3
<i>missing</i>	9	4.8

**23. FAS children are characterized by a growth deficiency**

a. strongly agree	33	17.6
b. agree	109	58.3
c. disagree	31	16.6
d. strongly disagree	6	3.2
<i>missing</i>	8	4.3

**24. FAS and FAE (fetal alcohol effect) are two names for the same condition**

a. strongly agree	9	4.8
b. agree	61	32.6
c. disagree	88	47.1
d. strongly disagree	16	8.6
<i>missing</i>	13	7.0

**25. FAS children have physical features that may change as they reach adolescence**

a. strongly agree	11	5.9
b. agree	85	45.5
c. disagree	71	38.0
d. strongly disagree	7	3.7
<i>missing</i>	13	7.0

**26. FAS children characteristically have better expressive language than receptive language**

a. strongly agree	87	46.5
b. agree	94	50.3
c. disagree	2	1.1
d. strongly disagree	1	0.5
<i>missing</i>	3	1.6

**27. FAS is found in all ethnic and socioeconomic groups**

a. strongly agree	0	0
b. agree	2	1.1
c. disagree	0	0
d. strongly disagree	0	0
<i>missing</i>	185	98.9

**28. FAS may result from even the smallest consumption of alcohol by the pregnant mother**

a. strongly agree	53	28.3
b. agree	93	49.7
c. disagree	31	16.6
d. strongly disagree	4	2.1
<i>missing</i>	6	3.2

**29. FAS children benefit best from early intervention efforts**

a. strongly agree	101	54.0
b. agree	74	39.6
c. disagree	4	2.1
d. strongly disagree	2	1.1
<i>missing</i>	6	3.2

## 30. FAS is viewed as a childhood disability

a. strongly agree	28	15.0
b. agree	86	46.0
c. disagree	48	25.7
d. strongly disagree	18	9.6
<i>missing</i>	7	3.7

## 31. FAS is becoming more of a problem in my classroom

a. strongly agree	24	12.8
b. agree	90	48.1
c. disagree	56	29.9
d. strongly disagree	10	5.3
<i>missing</i>	7	3.7

**WHICH OF THE FOLLOWING FEATURES ARE CHARACTERISTIC OF  
FETAL ALCOHOL SYNDROME?**

## 32. Motor delays

a. yes	149	79.7
b. no	30	16.0
<i>missing</i>	8	4.3

## 33. Hyperactivity

a. yes	134	71.7
b. no	40	21.4
<i>missing</i>	13	6.9

## 34. Attention deficit problems

a. yes	158	84.5
b. no	24	12.8
<i>missing</i>	5	2.7

## 35. Facial physical abnormalities

a. yes	131	70.1
b. no	48	25.7
<i>missing</i>	8	4.3

## 36. Learning impairments

a. yes	158	84.5
b. no	26	13.9
<i>missing</i>	3	1.6